CURRENT LISTING OF CLAIMS:

Claims 1-36 (Cancelled).

37. (Currently amended) A target assembly for containing and cooling enriched water for the production of fluorine-18, comprising:

a target body;

a target chamber formed within said target body, said target chamber having a front window for exposing said chamber to a particle accelerator, a rear wall opposite said front window, said rear wall being sloped with respect to said front window, and a top wall connecting said rear wall to said front window; and

a first cooling channel having a first cooling fluid inlet at one end of said target body, a first cooling fluid outlet at another end of said target body, and a first cooling fluid channel conduit formed within said target body coupling said first cooling fluid inlet with said first cooling fluid outlet, said first cooling fluid channel conduit running from said first cooling fluid inlet to a first location adjacent to said rear wall, from said first location to a second location between said rear wall and said top wall along ~~at least a portion of~~ said rear wall, from said second location to a third location adjacent to said top wall ~~and~~ along ~~a portion of~~ said top wall, and from said third location to said first cooling fluid outlet.

38. (Previously presented) A target assembly as set forth in claim 37, further comprising:

a second cooling channel having a second cooling fluid inlet at one end of said target body, a second cooling fluid outlet at another end of said target body, and a second cooling fluid channel conduit formed in said target body coupling said second cooling fluid inlet with said second cooling fluid outlet, said second cooling fluid channel conduit running substantially parallel to said first cooling fluid channel conduit.

39. (Previously presented) A target assembly as set forth in claim 37, wherein said target body is fabricated substantially from tantalum.

40. (Previously presented) A target assembly as set forth in claim 37, further comprising an enriched water inlet port formed in said target body, an enriched water inlet channel coupled between said target chamber and said enriched water inlet port, an enriched water outlet port formed in said target body, and an enriched water outlet channel coupled between said target chamber and said enriched water outlet port.

41. (Previously presented) A target assembly as set forth in claim 40, wherein said enriched water inlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window.

42. (Previously presented) A target assembly as set forth in claim 40, wherein said enriched water outlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window.

43. (Previously presented) A target assembly as set forth in claim 40, wherein said enriched water inlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window, and said enriched water outlet port also is located at said outer surface of said target body.

44. (Currently amended) A target assembly for containing and cooling enriched water for the production of fluorine-18, comprising:

a target body;

a target chamber formed within said target body, said target chamber having a front window for exposing said chamber to a particle accelerator, a rear wall opposite said front window, said rear wall being sloped with respect to said front window, and a top wall connecting said rear wall to said front window;

a first cooling channel having a first cooling fluid inlet at one end of said target body, a first cooling fluid outlet at another end of said target body, and a first cooling fluid channel conduit formed within said target body coupling said first cooling fluid inlet with said first cooling fluid outlet, said first cooling fluid channel conduit running <u>from said first cooling fluid inlet to a first location adjacent to said rear wall, from said first</u>

location to a second location between said rear wall and said top wall along ~~at least a portion of~~ said rear wall, from said second location to a third location adjacent to said top wall ~~and~~ along ~~a portion of~~ said top wall, and from said third location to said first cooling fluid outlet; and

a second cooling channel having a second cooling fluid inlet at one end of said target body, a second cooling fluid outlet at another end of said target body, and a second cooling fluid channel conduit formed within said target body coupling said second cooling fluid inlet with said second cooling fluid outlet, said second cooling fluid channel conduit running substantially parallel to said first cooling fluid channel conduit.

45. (Previously presented) A target assembly as set forth in claim 44, wherein said target body is fabricated substantially from tantalum.

46. (Previously presented) A target assembly as set forth in claim 44, further comprising an enriched water inlet port formed in said target body, an enriched water inlet channel coupled between said target chamber and said enriched water inlet port, an enriched water outlet port formed in said target body, and an enriched water outlet channel coupled between said target chamber and said enriched water outlet port.

47. (Previously presented) A target assembly as set forth in claim 46, wherein said enriched water inlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window.

48. (Previously presented) A target assembly as set forth in claim 46, wherein said enriched water outlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window.

49. (Previously presented) A target assembly as set forth in claim 46, wherein said enriched water inlet port is located at an outer surface of said target body, said outer surface being substantially parallel to said front window, and said enriched water outlet port also is located at said outer surface of said target body.